DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT OFFICE OF HIGHWAYS	**EDSM No: I.1.1.8**

ENGINEERING DIRECTIVES AND STANDARDS

VOLUME	**I**	**Revision Date: 03/13/2014**
CHAPTER	**1**	**Subject:**
SECTION	**1**	**ESTABLISHMENT OF UNIFORM, REGULATORY TRUCK WEIGHT LIMIT FOR STRUCTURALLY DEFICIENT HIGHWAY BRIDGES LOCATED ON PUBLIC ROAD**
DIRECTIVE	**8**	

1. PURPOSE:

This directive establishes a policy for determining the need for truck weight limits on bridges in accordance with the rules set forth in the "National Bridge Inspection Standards" published in the Federal Register and the "Manual on Uniform traffic Control Devices for Streets and Highways".

2. SCOPE:

This directive is applicable to all bridges located on public roads in the State of Louisiana.

3. POLICY:

It is the policy of the Department to require the placement of regulatory truck weight limits on all bridges which are not adequate to carry the maximum legal truck weights allowed by Louisiana law. All regulatory truck weight limits shall be properly recorded in the conveyance records of the office of the Clerk of Court in the parish(es) in which the affected bridge is located and the proper public officials shall be notified of this act.

All bridges will be structurally evaluated according to the latest version of the AASHTO *Manual for Bridge Evaluation*, the LADOTD *Policies and Guidelines for Bridge Rating and Evaluation, and* LADOTD Bridge *Design and Evaluation Manual*. The trucks used to evaluate bridges are listed in The Policies and Guidelines for Bridge Rating and Evaluation. These trucks are selected to simulate Louisiana design, legal, and overload trucks. The legal trucks are utilized to estimate the weight limits required for structurally deficient bridges.

The weight limit requirements shall be determined by using the posting rating factor to select one of the nine posting categories from the following table.

CATEGORY	SIGN TYPE	WEIGHT LIMIT
1	R11-2	CLOSED
2	R12-1	03T Gross
3	R12-1	04T Gross
4	R12-1	05T Gross
5	R12-5	10T Single Unit Truck – 15T Combination Truck
6	R12-5	15T Single Unit Truck – 25 T Combination Truck
7	R12-5	20T Single Unit Truck – 35T Combination Truck
8	R12-5	25T Single Unit Truck – 40T Combination Truck
9		NO LIMIT REQUIRED

When truck weight limits are required, they shall be expressed by an R11-2 or one of the two regulatory highway signs from the R12 Series of FHWA's *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD) listed below. Weight limit values will be provided in five (5) ton increments with noted exceptions to minimize the sign legend variations and thereby standardize the weight limit signing practice of the State. These signs are depicted in Figure 1 and are interpreted to restrict truck weight limit in the following context:

a. The bridge closed sign (R11-2) closes a bridge to all traffic.

b. The weight limit sign (R12 – 1) limits the gross weight of all vehicles and all vehicle combinations to no more than the specified weight limit.

c. The weight limit sign (R12 – 5) limits the gross weight of all single truck vehicles to the displayed first number and the gross weight of all vehicle combinations to the displayed second number. The depicted legal trucks are interpreted to merely symbolize all vehicles and all vehicle combinations respectively.

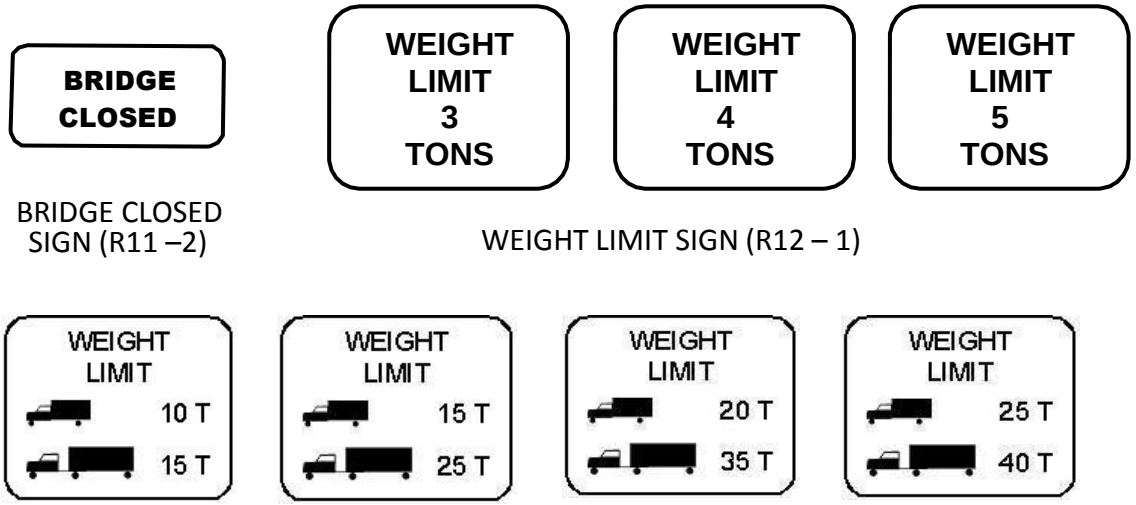

FIGURE 1 – BRIDGE WEIGHT LIMIT SIGNS

Placement of signs shall be in accordance with MUTCD for all bridges. Furthermore, for State Maintained Bridges, weight limit signs will be located near each abutment and located approximately 1000 feet in advance of each abutment. Additionally, the heads of the route on which the bridge is located must be signed with the weight limit and the distance to the bridge along the route. If there is a series of bridges with weight limits on a route, the most restrictive weight limit and distance to the nearest affected bridge shall appear on the head of the route sign. Figure 2 illustrates the head of route signage. MUTCD must be followed.

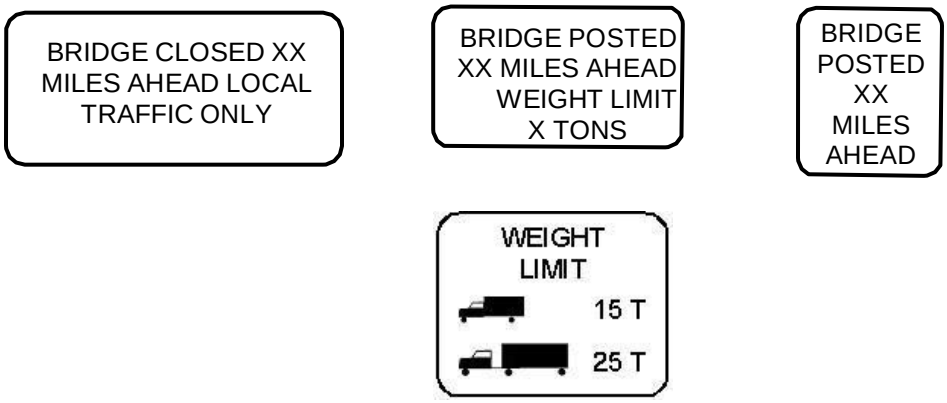

FIGURE 2 – WEIGHT LIMIT SIGNS AT THE HEAD OF ROUTE

4. IMPLEMENTATION:

The State Bridge Rating Engineer shall be responsible for the implementation of this policy.

- **STATE MAINTAINED HIGHWAY SYSTEM (ON-SYSTEM)**

All requests for changes in status of weight limits for bridges on the State maintained highway system shall be directed to the office of the Chief Engineer of the Office of Engineering through the State Bridge Rating Engineer for implementation. In the event of an emergency, signing may be placed on a bridge site in advance of the request for weight limits and the limit action shall be filed immediately with the notification of advanced placement or removal of signing.

If the structure has a NBIS condition rating of three (3) or less for the primary load carrying member(s), it should be evaluated and posted with the appropriate weight limit sign based on the evaluation of the condition.

The State Bridge Rating Engineer is responsible for initiating and determining the weight limits of Louisiana bridges on State maintained highway system. The Chief Engineer of the Office of Engineering shall be the only approval authority for regulatory weight limit actions for bridges in which the Department's General Council is requested to prepare Chief Engineer's Orders (CEOs). The General Council will file the Chief Engineer's Orders in the office of the Clerk of Court in the appropriate parish or parishes.

By copy of the request for Chief Engineer's Orders, the following engineering function shall be advised.

a. The Chief Maintenance Engineer will be requested to have his or her personnel take the necessary action relative to the proper erection or removal of signing.

b. The District ADA Engineer will be given notice so that his or her personnel can plan the location for the head of route signs in advance of the bridge when necessary.

c. The appropriate District Administrator will be advised of the request so that he or she may provide any input they desire prior to the execution of weight limits and have a record of the original request for the District's bridge files.

d. Transport Permit Manager will be advised of the request so that permitting operations can prohibit routing of overload trucks over deficient bridges in handling permit loads.

e. The Structures and Facilities Maintenance Engineer, Bridge Design Engineer Administrator, and Highway Bridge Program Manager will be advised so that the Bridge Maintenance file can be updated.

The bridge rating unit has the responsibility to assisting the State Bridge Rating Engineer in reviewing the on-system weight limit requirements after a report of a structural change in condition or due to modification and/or additions made to the structure. The Bridge Maintenance Section has the responsibility to assistant the State Bridge Rating Engineer in reviewing all the timber bridges and off-system bridge weight limits and cooperates with the appropriate District representatives.

When a bridge is permanently removed from service, weight limit signs associated with the bridge shall be removed accordingly. The sign removal shall be concurrent with the notification of the District Administrator who shall be responsible to immediately advise the Chief Engineer and the State Bridge Rating Engineer of the action.

- **NON-STATE MAINTAINED HIGHWAY SYSTEM (OFF-SYSTEM)**

The responsibility for implementing weight limits for bridges on public roads which are not on the State maintained highway system (off-system) shall rest with the owner. The owner shall implement procedures of routine review of weight limit requirements and establish weight limits on bridges within the policy of this directive. The compliance to the terms of this directive is subject to audit by the State Bridge Inspection Program Manager. The weight limits shall be reported to the Bridge Maintenance Section quarterly for reviewing in accordance with Bridge Maintenance Directive #5.

When a structurally deficient bridge is repaired, the Bridge Owner shall be responsible to submit to the ADA Operations a revised bridge rating evaluation. The ADA Operations will distribute the revised rating evaluation to the appropriate parties. Exceptions to this requirement are limited to timber bridges repaired under routine circumstances which had not been previously closed by DOTD in accordance with Bridge Maintenance Directive #5.

5. ALLOWABLE STRESS RATING FOR TIMBER BRIDGES:

Timber bridges may be evaluated and posted using either the Allowable Stress Rating (ASR) method or the Load and Resistance Factor Rating (LRFR) method. The instructions and tables contained in this section titled “Allowable Stress Rating For Timber Bridges” are intended to be used for timber bridges rated and posted using the ASR - Allowable Stress Rating method.

The ASR rating and posting legal trucks are shown in Figure 3.

Vehicle type 2	Vehicle type 2-S1	Vehicle type 3	Vehicle type 3-S2
Rating Vehicle Code 1	Rating Vehicle Code 2	Rating Vehicle Code 4	Rating Vehicle Code 5
H-15	HS-20		

Figure 3. Timber Bridges ASR method Rating Vehicles

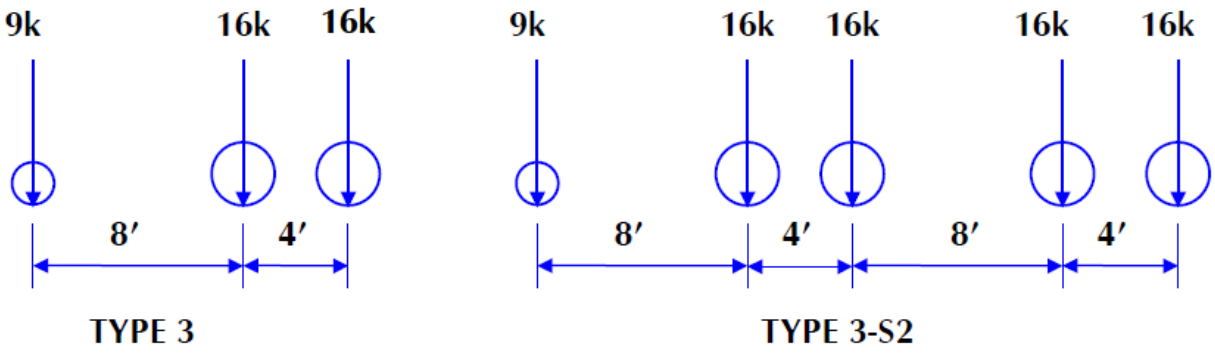

Figure 4. Posting Vehicles Configuration

The structural capacity of a bridge is expressed in terms of an operating and posting loads. If the operating load is a Type 2 or Type 2-S1 truck configuration, the corresponding posting load is a Type 3 or Type 3-S2 truck configuration correspondingly. The structural capacity of a bridge is expressed as a three (3) digit code. The first digit designates the type of truck with Rating Vehicle Code 1, 2, 4, and 5. The remaining two (2) digits represent the gross weight of the truck in tons that the bridge should be limited for the designated truck type. If the weight for the operating load and posting load is in excess of the maximum statutory weight for each designated truck type, the bridge does not require truck weight limits. Otherwise, truck weight limits may be required.

To determine the weight limit requirements, find the applicable range of value for the operating and posting loads in the Bridge Weight Limit Requirements Table in the first two (2) columns respectively. Find the weight limit requirements for each in the third column. If the applicable range for the operating load is above the double line, select the lower weight limit requirement; if the applicable range for the operating load is below the double line, select the higher weight limit requirements.

BRIDGE WEIGHT LIMITS REQUIREMENTS TABLE (ASR method- Timber bridges)		
Operating Load Range or Value	**Posting Load Range or Value**	**Weight Limit Requirements**
100-102	400-402	R11-2 (CLOSED)
103-	403-	R12-1 (03T)
104-	404-	R12-1 (04T)
105-109	405-409	R12-1 (05T)
209-214	509-514	R12-1 (05T)
110-114	410-414	R12-5 (10T-15T)
215-224	515-524	R12-5 (10T-15T)
115-117	415-419	R12-5 (15T-25T)
225-228	525-534	R12-5 (15T-25T)
118-119		R12-5 (15T-25T)
229-234		R12-5 (15T-25T)
120-124	420-424	R12-5 (20T-35T)
235-239	535-539	R12-5 (20T-35T)
125-129	425-429	R12-5 (25T-40T)
240-243	540-543	R12-5 (25T-40T)
130-199	430-499	NO LIMITS REQUIRED
244-299	544-599	NO LIMITS REQUIRED

6. OTHER ISSUANCE AFFECTED:

All directives, memoranda, or instructions issued heretofore to conflict with his directive are hereby rescinded.

7. EFFECTIVE DATE:

This directive shall be effective immediately upon receipt.

RICHARD L. SAVOIE
CHIEF ENGINEER